PUBLISHED BY LOBSTER

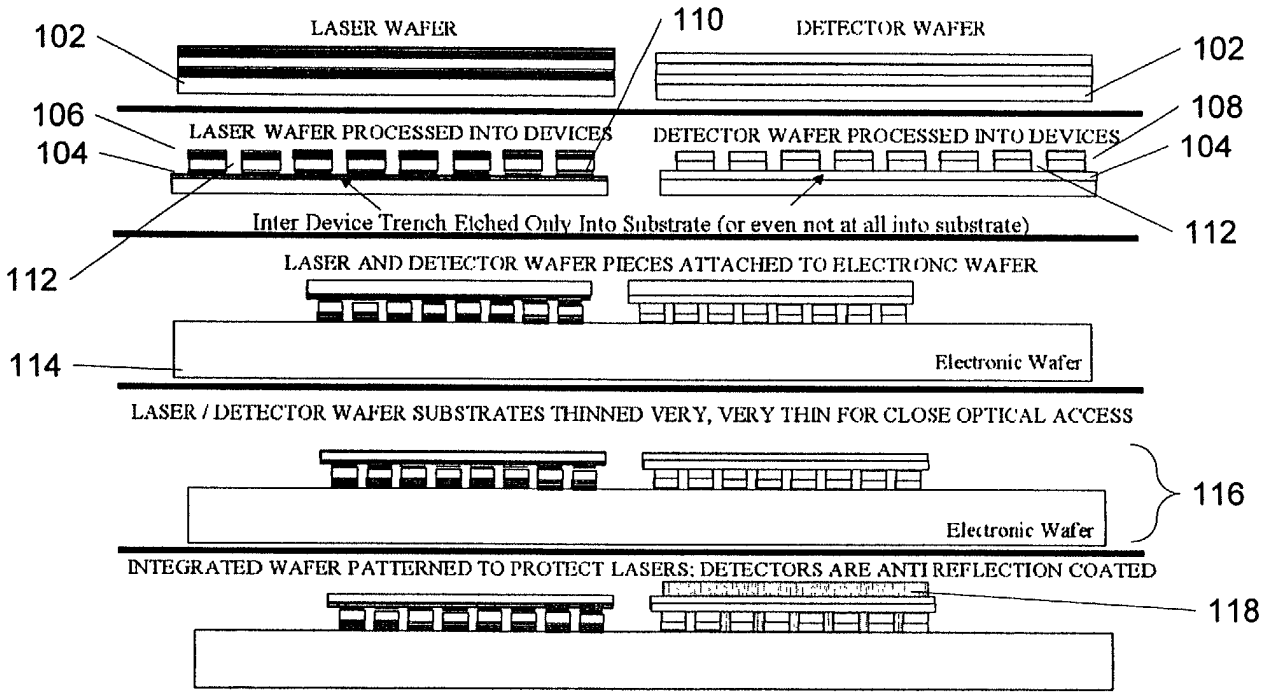


FIG. 1

Document downloaded

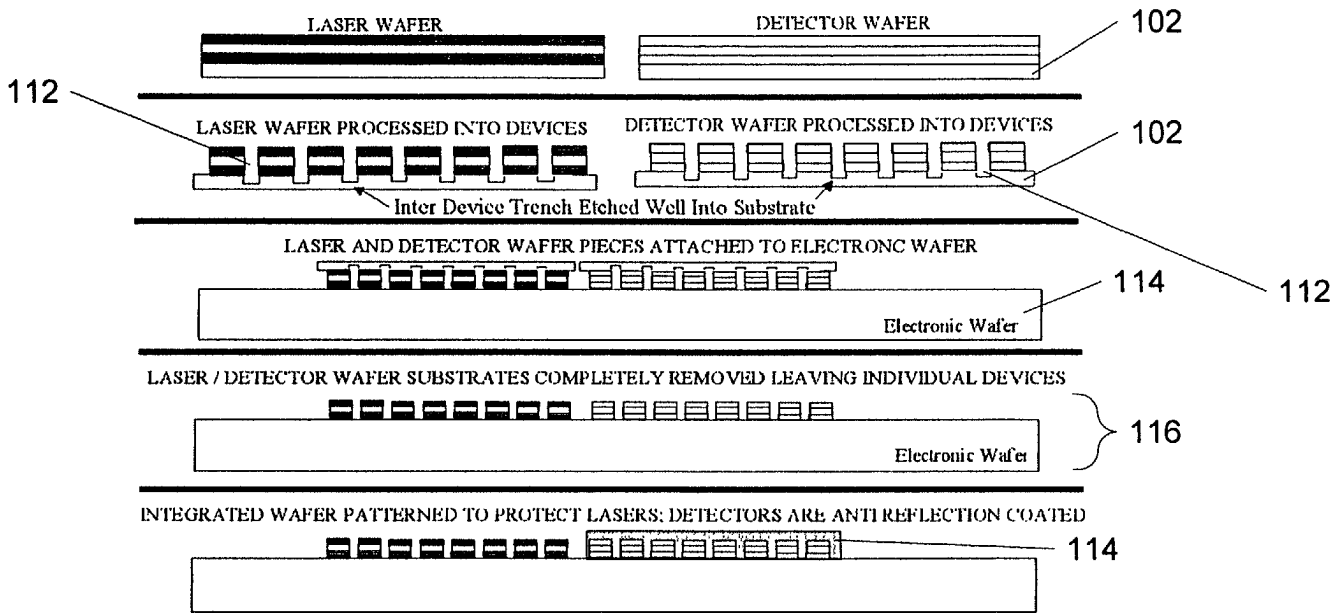


FIG. 2

EP 0 893 290 A1

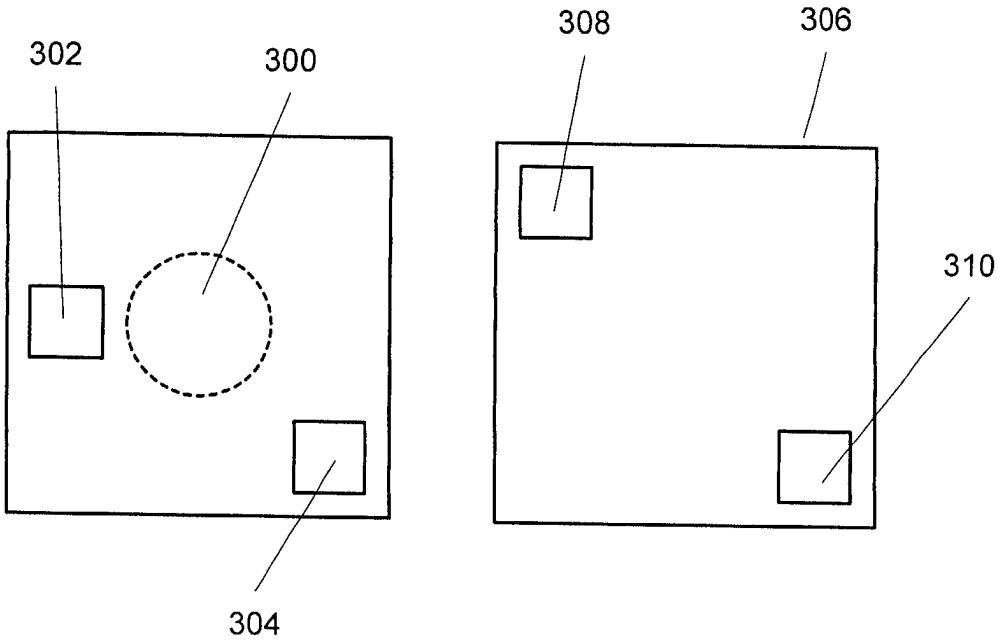


FIG. 3

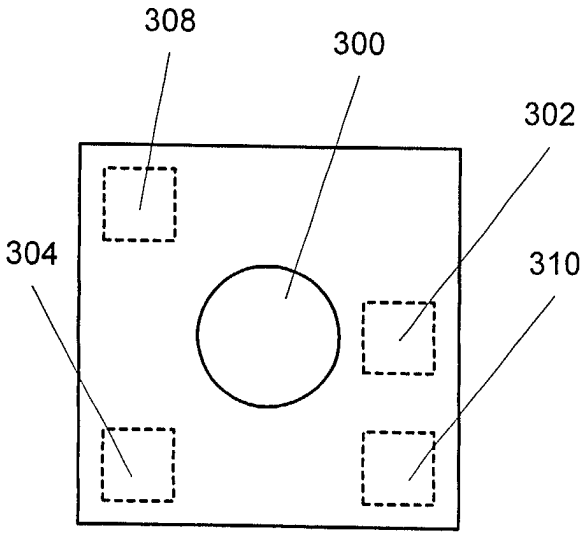


FIG. 4

Document classified

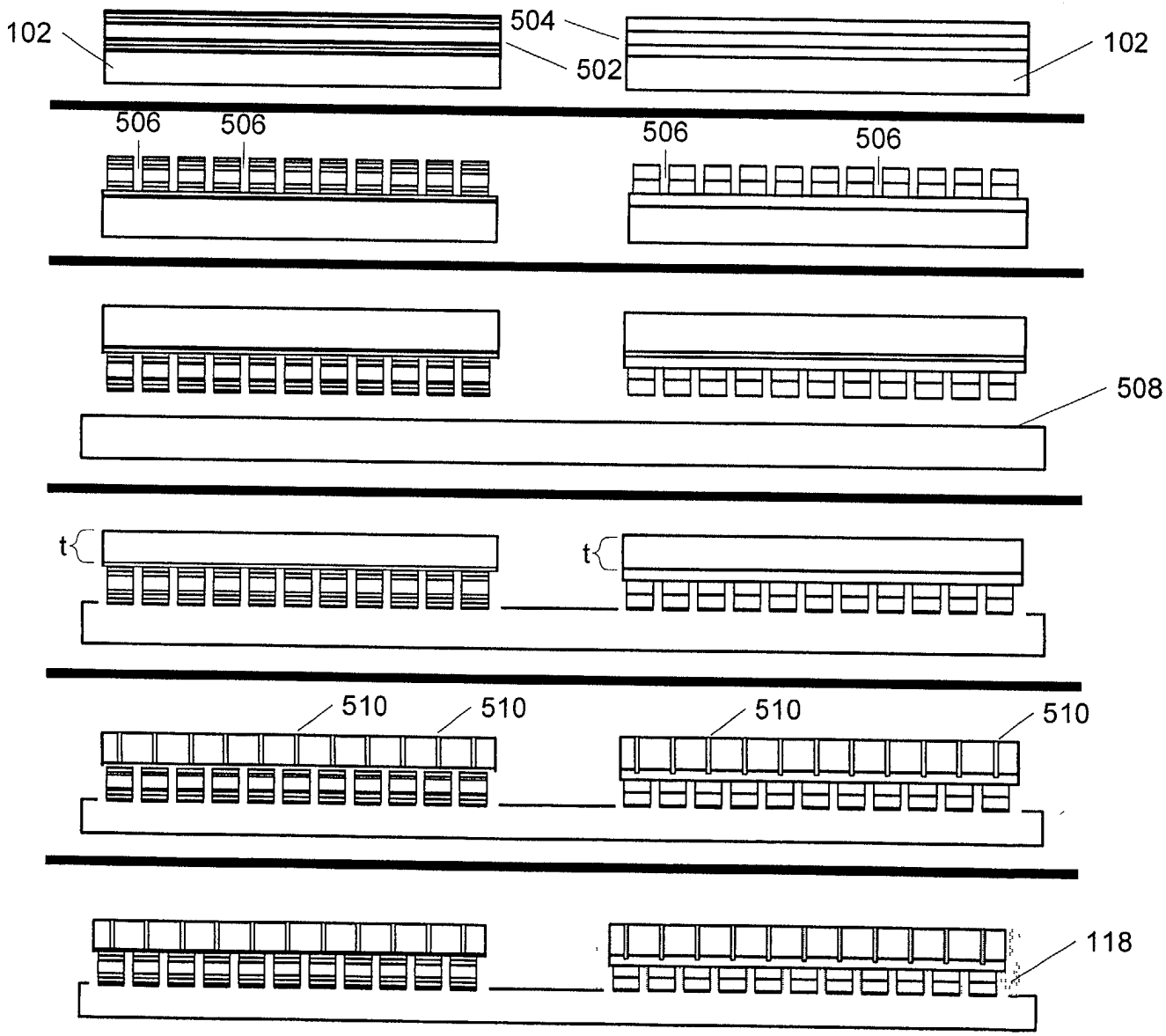


FIG. 5

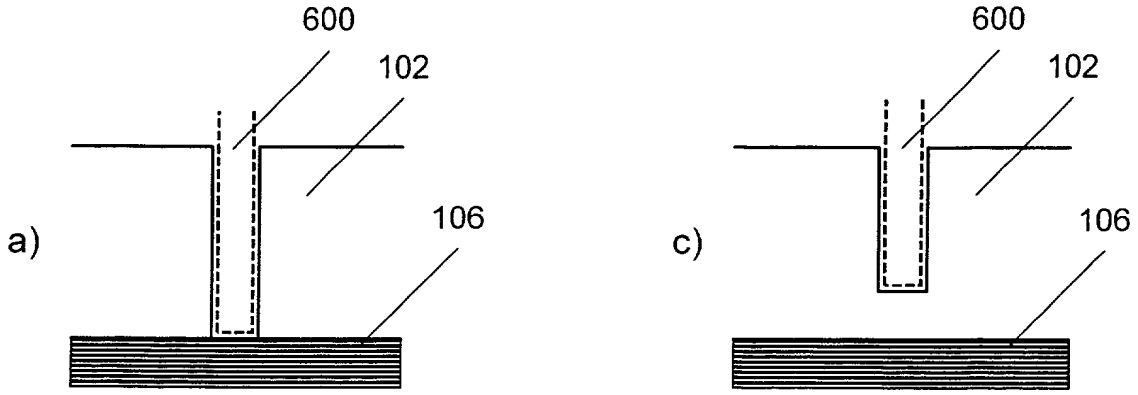
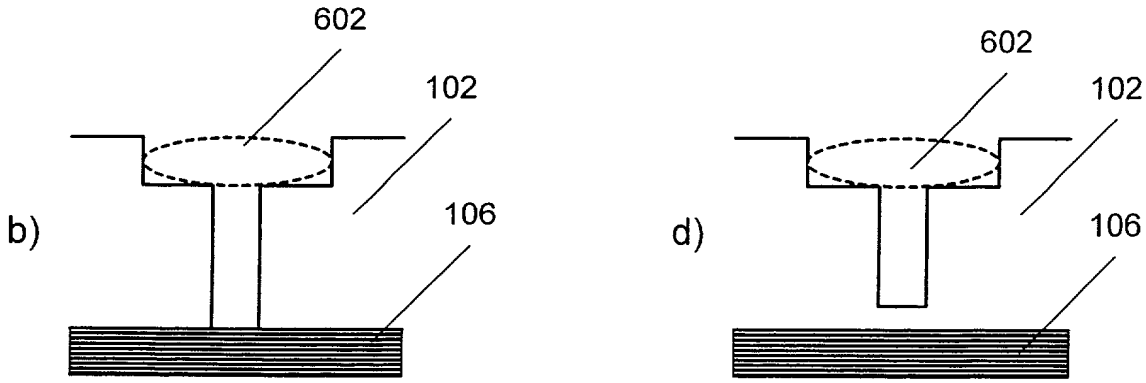
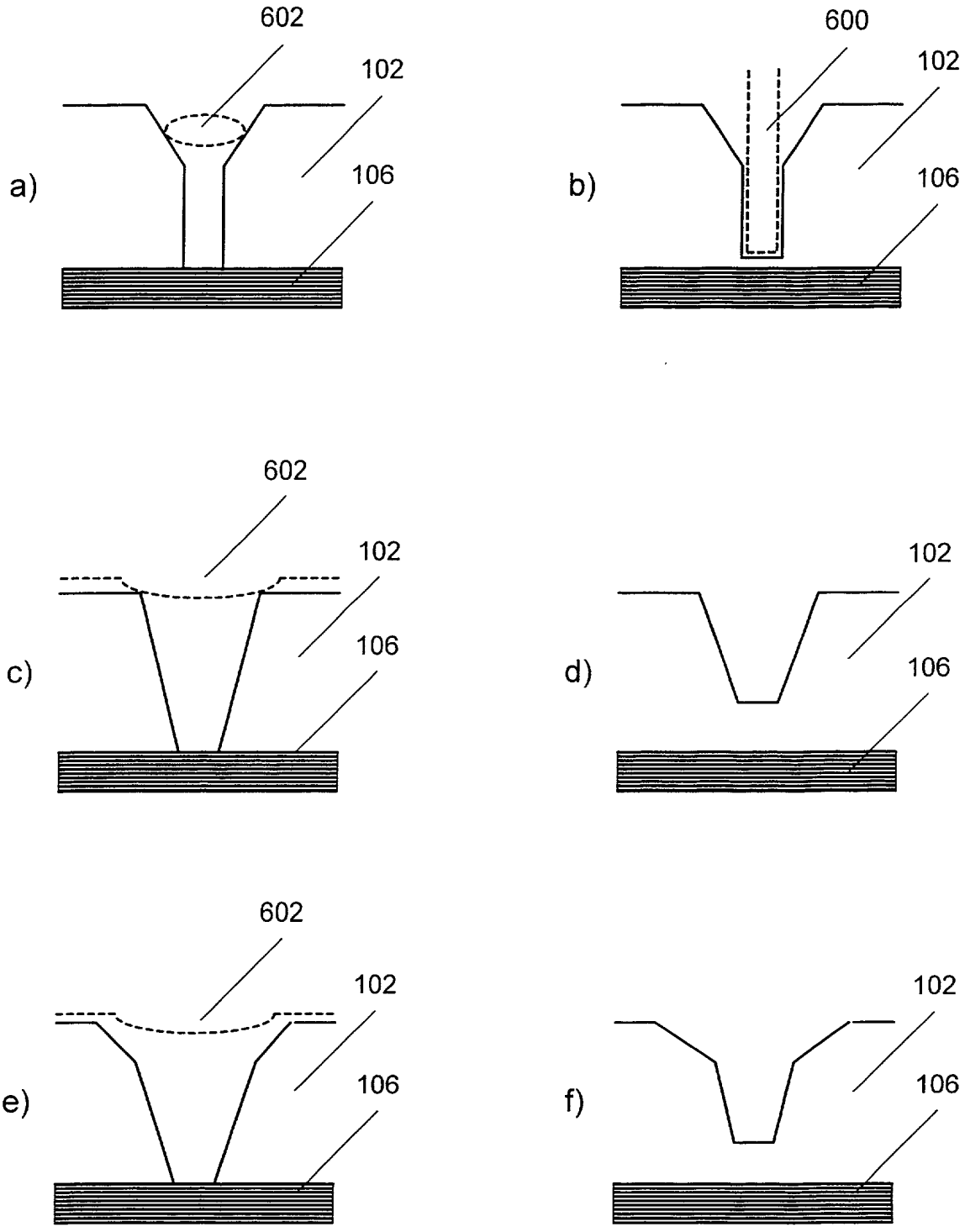


FIG. 6

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b)
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FIG. 7

FIG. 8

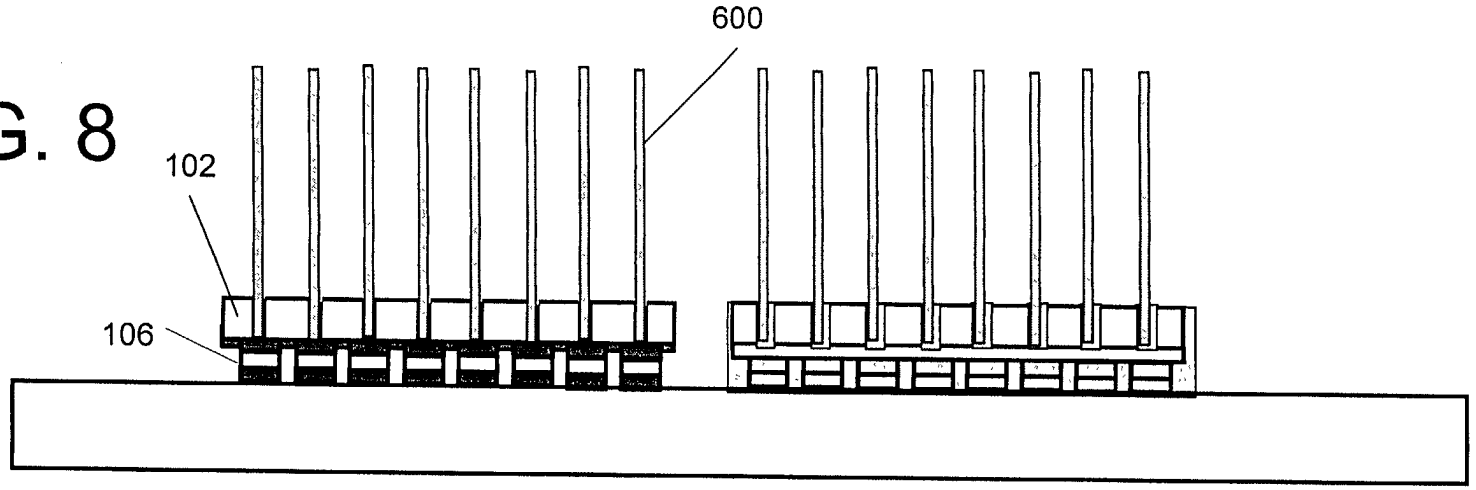
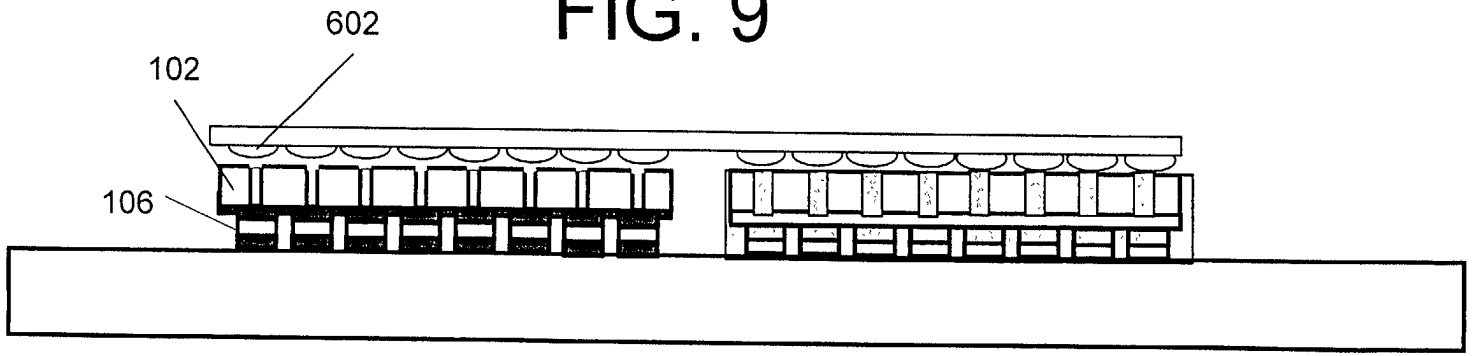


FIG. 9



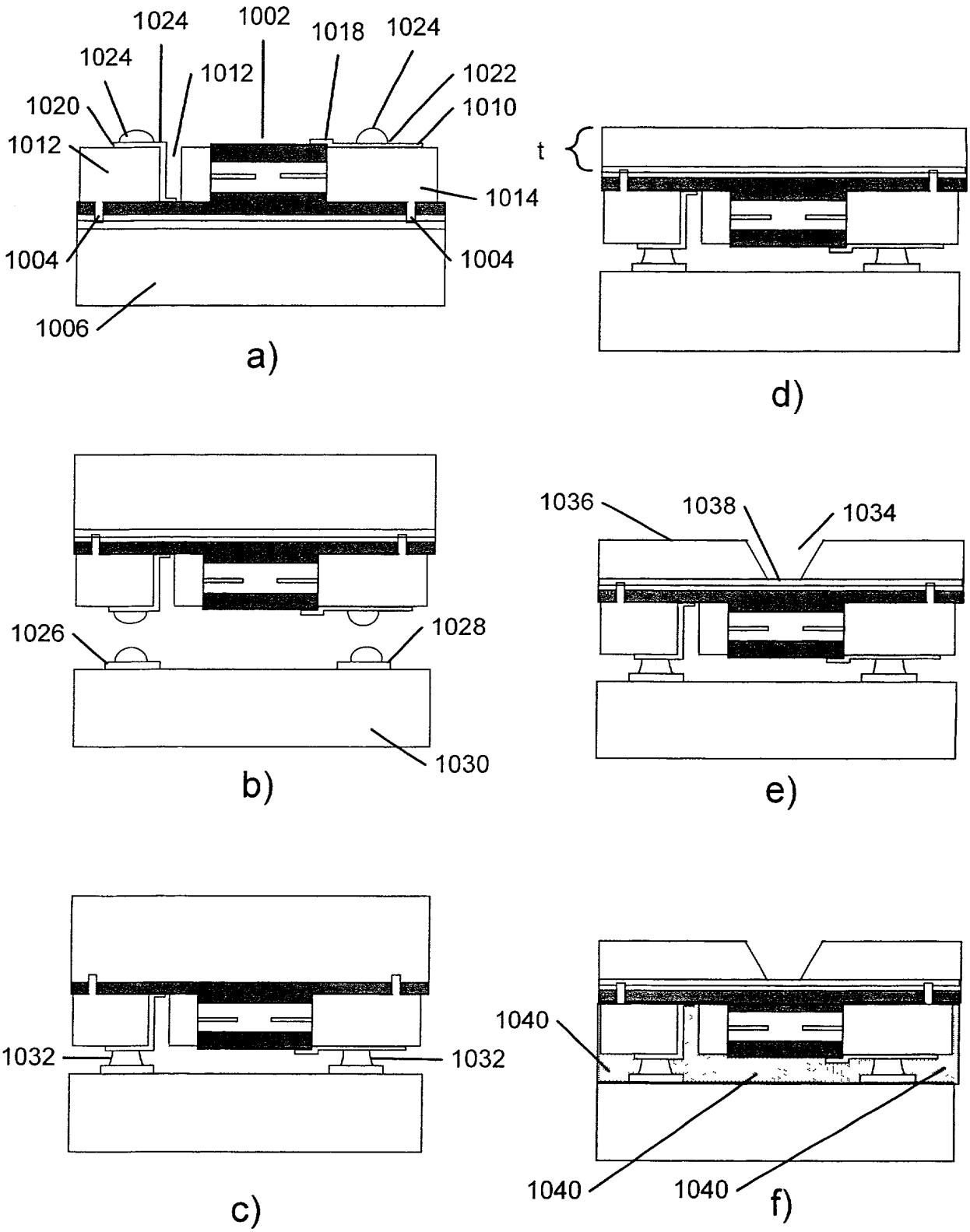

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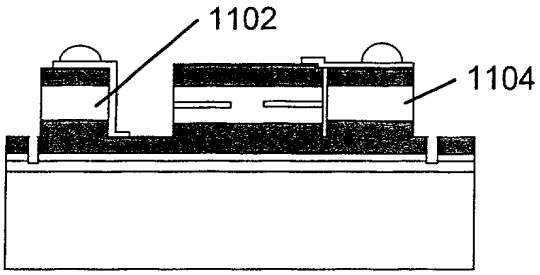
FIG. 10



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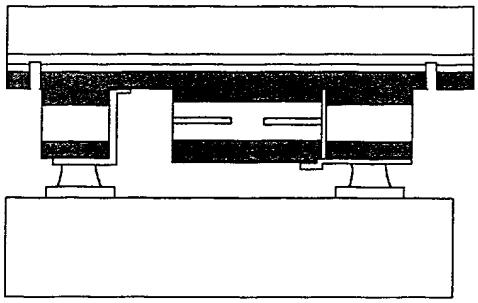

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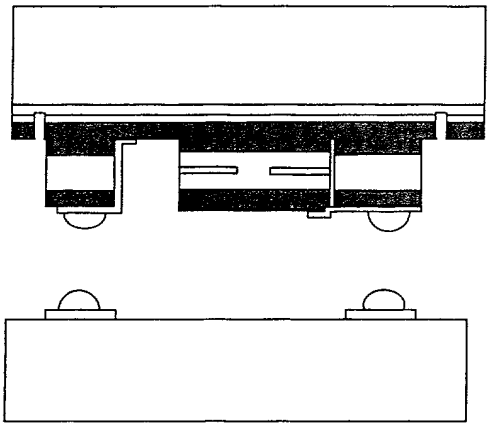

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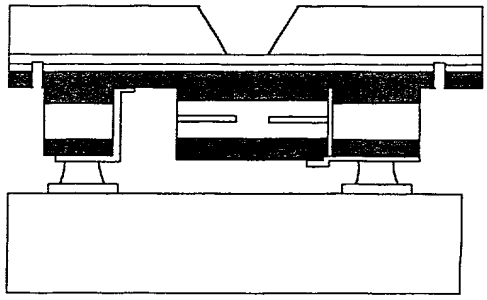

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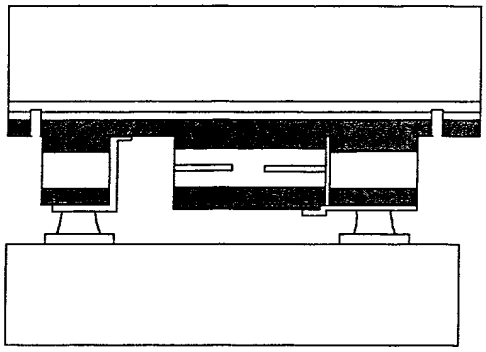

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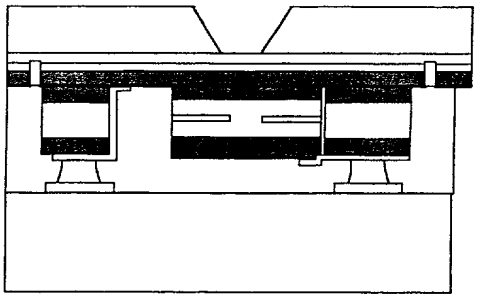

f)

FIG. 11

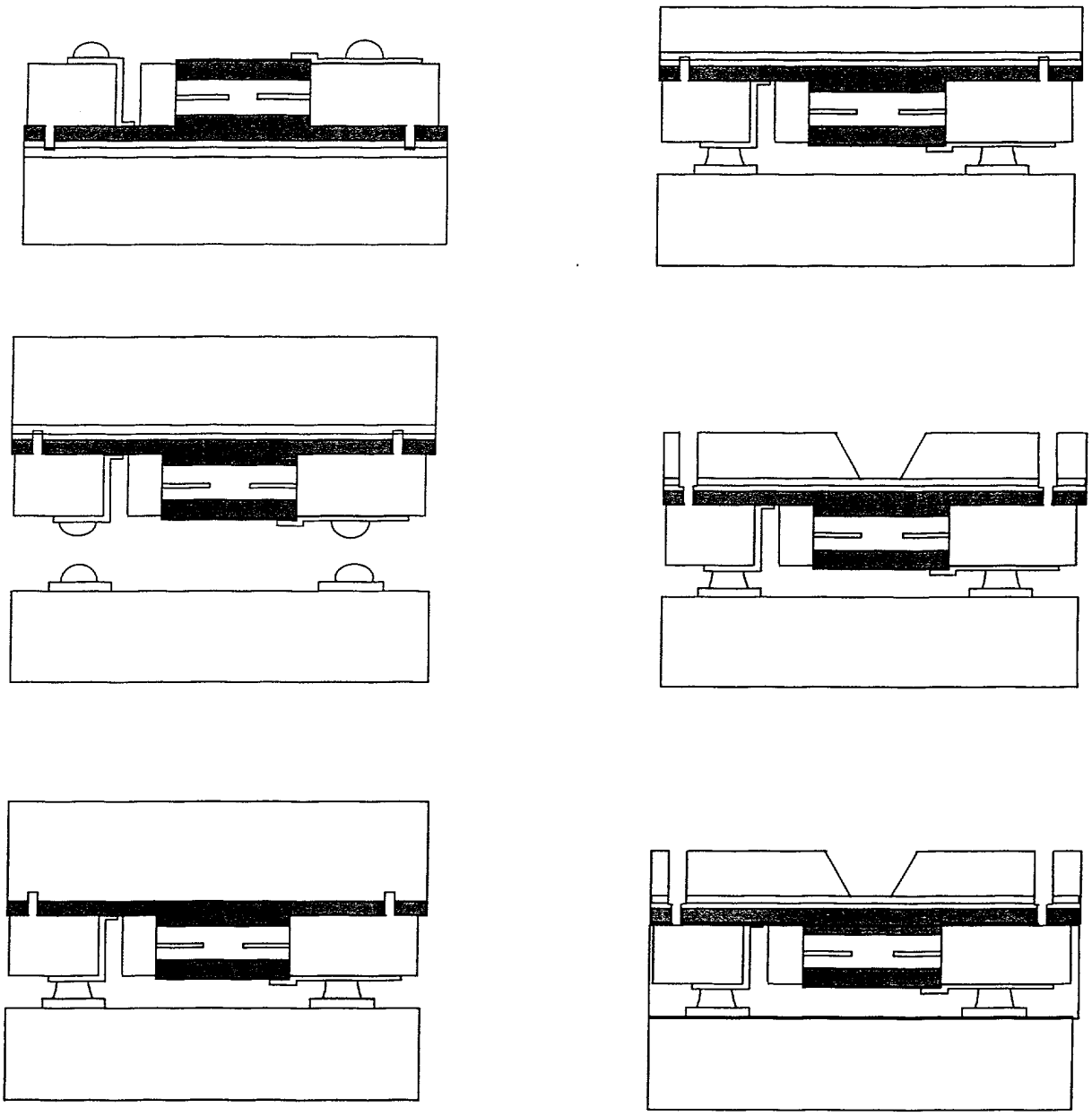

FIG. 12

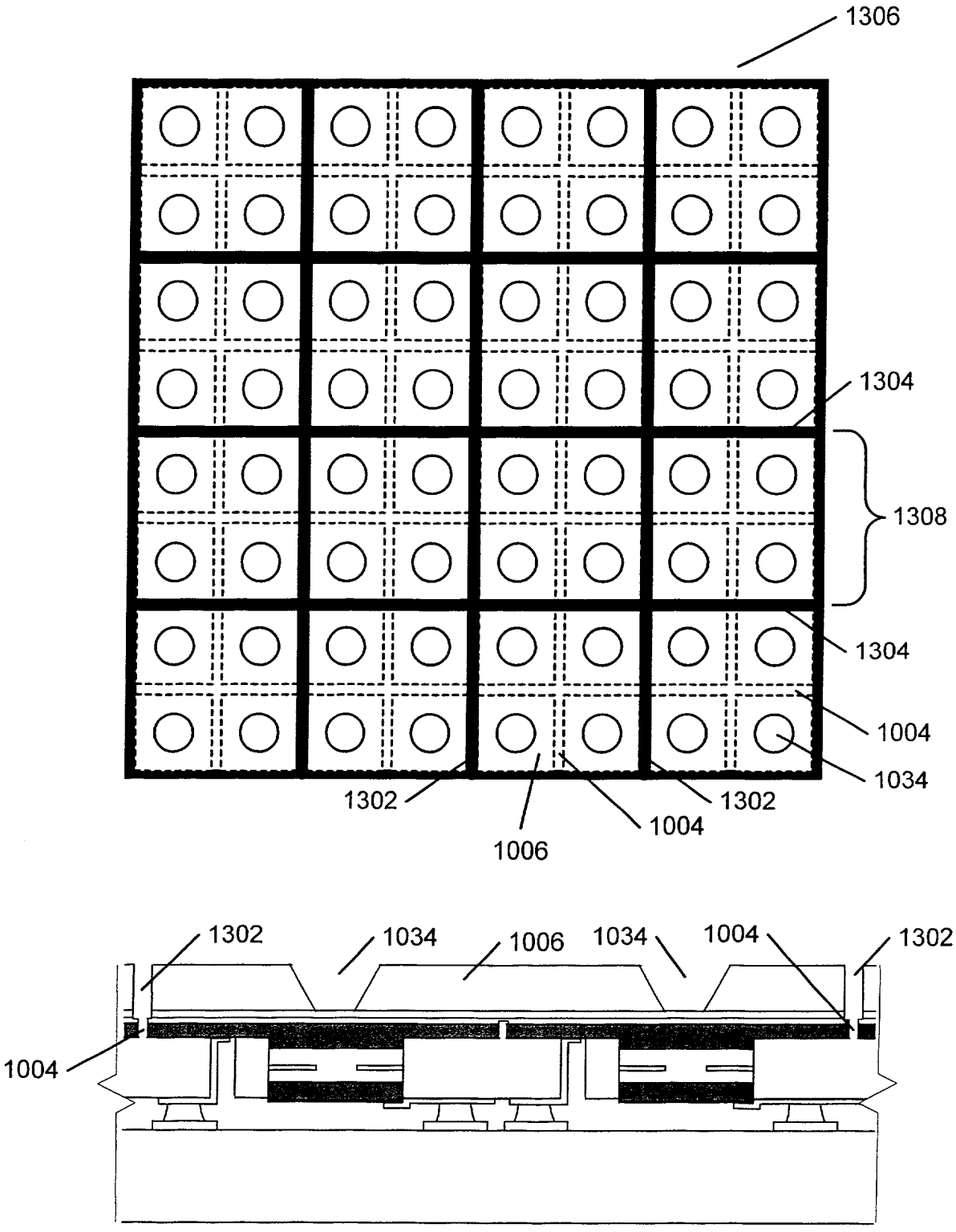
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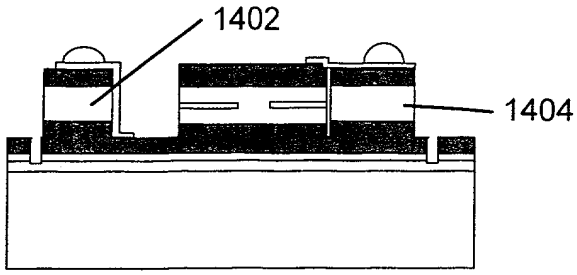
FIG. 13



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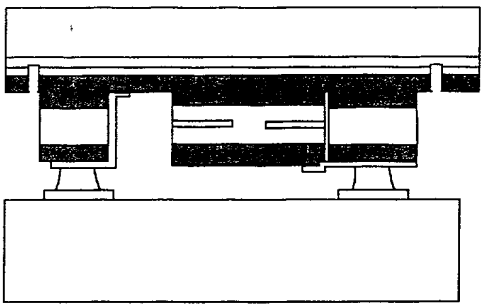

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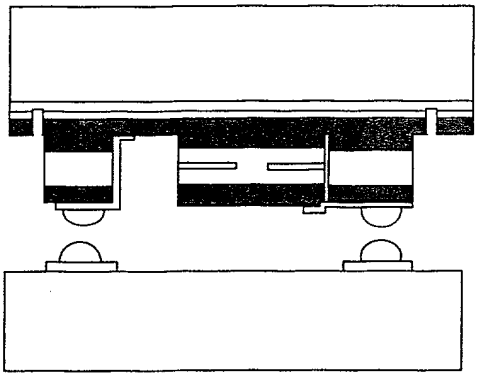

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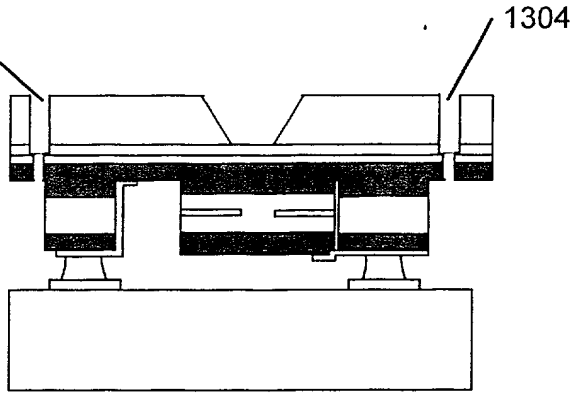

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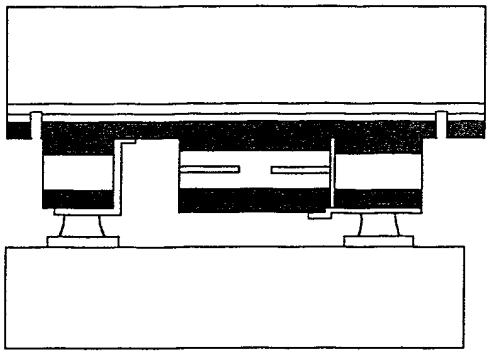
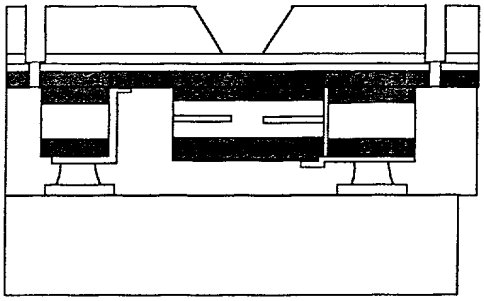


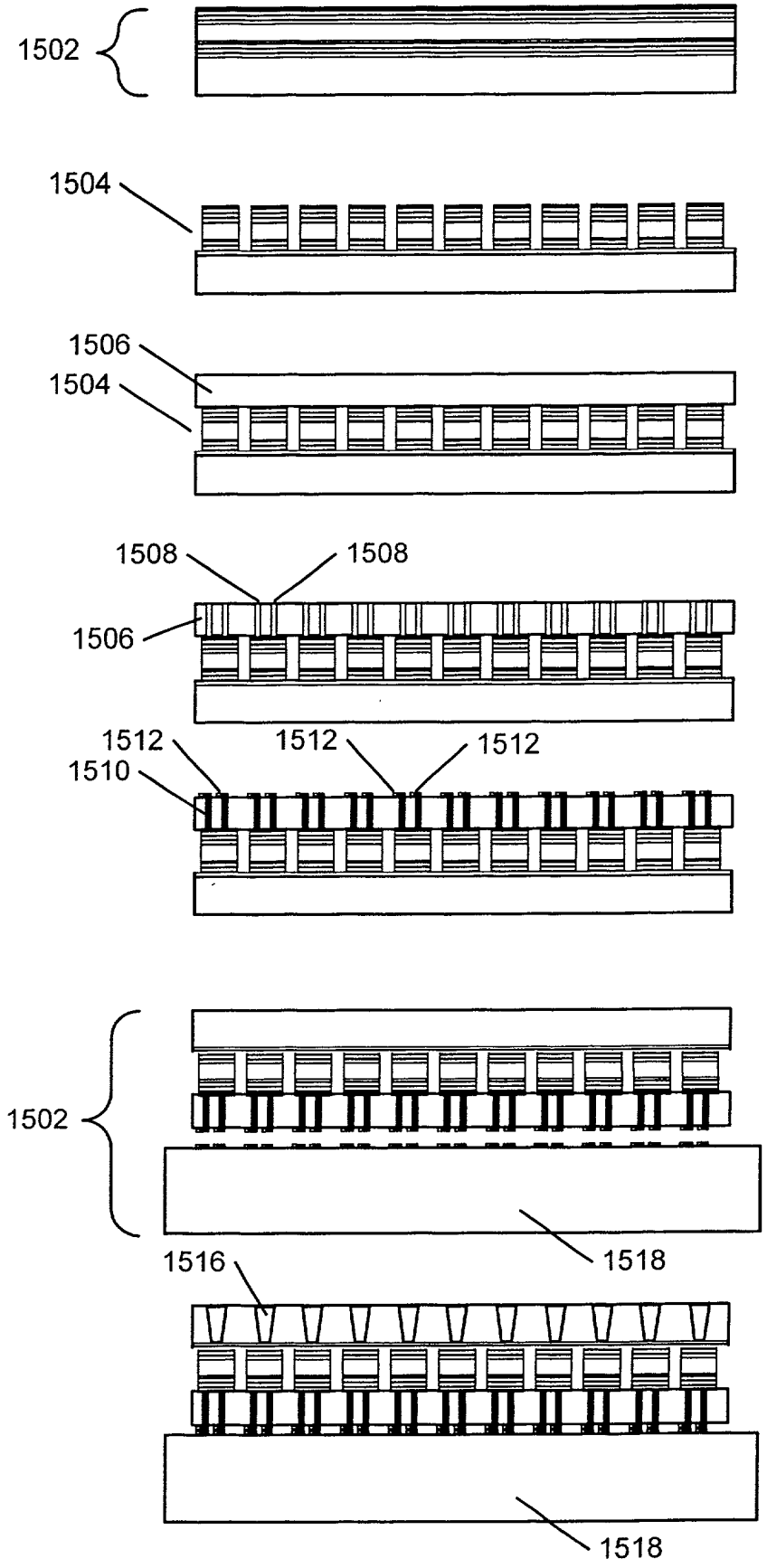
c)



f)

FIG. 14

FIG. 15


1502
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1518

Optical wafers (e.g Laser and Detector wafers)

Process into individual devices

(Optional) Attach carrier

Thin substrate to appropriate thickness to facilitate etching

Etch vias (or drill holes) and pattern with insulator

Fill vias or holes with conductive material

Pattern wafer substrate to match pad locations on electronic chip

Attach optical chip to electronic chip using now matching pad locations

(Optional) Remove holder

(Optional) AR coat detectors

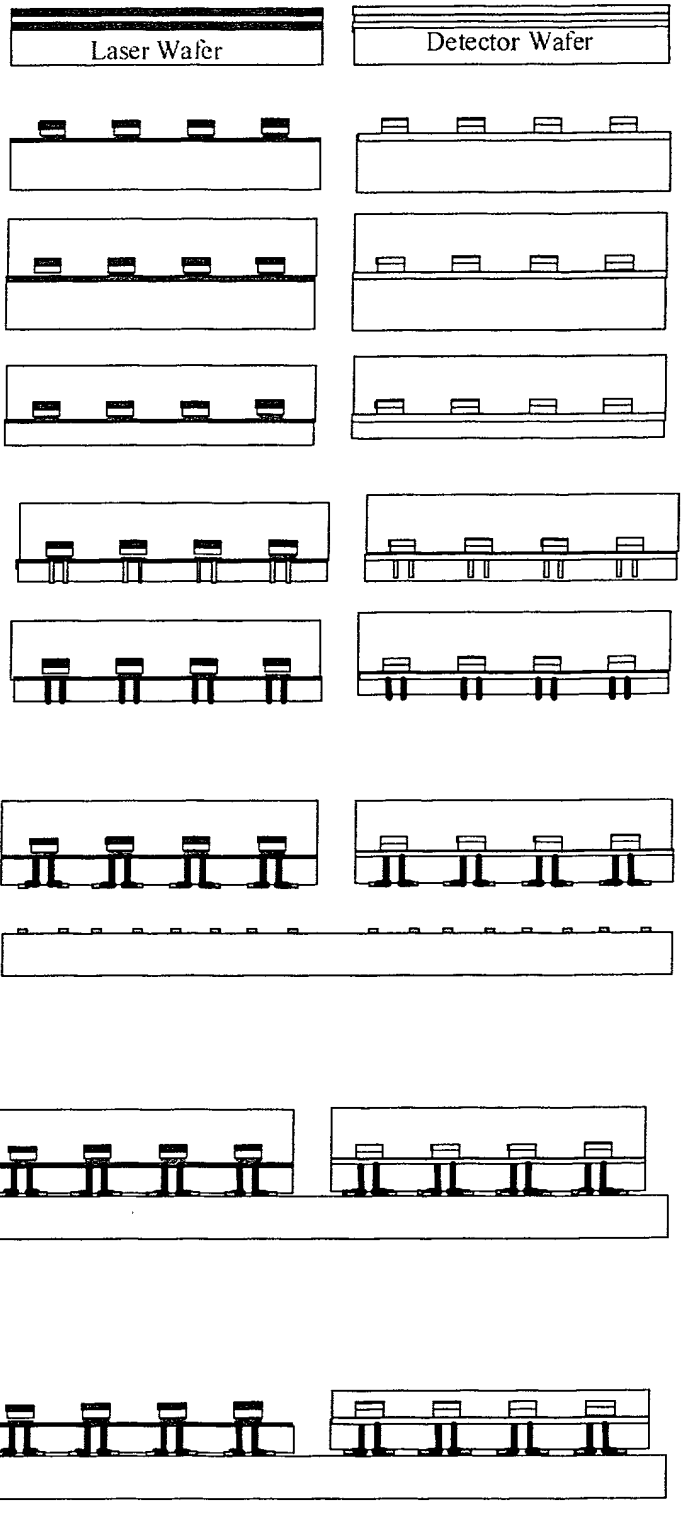
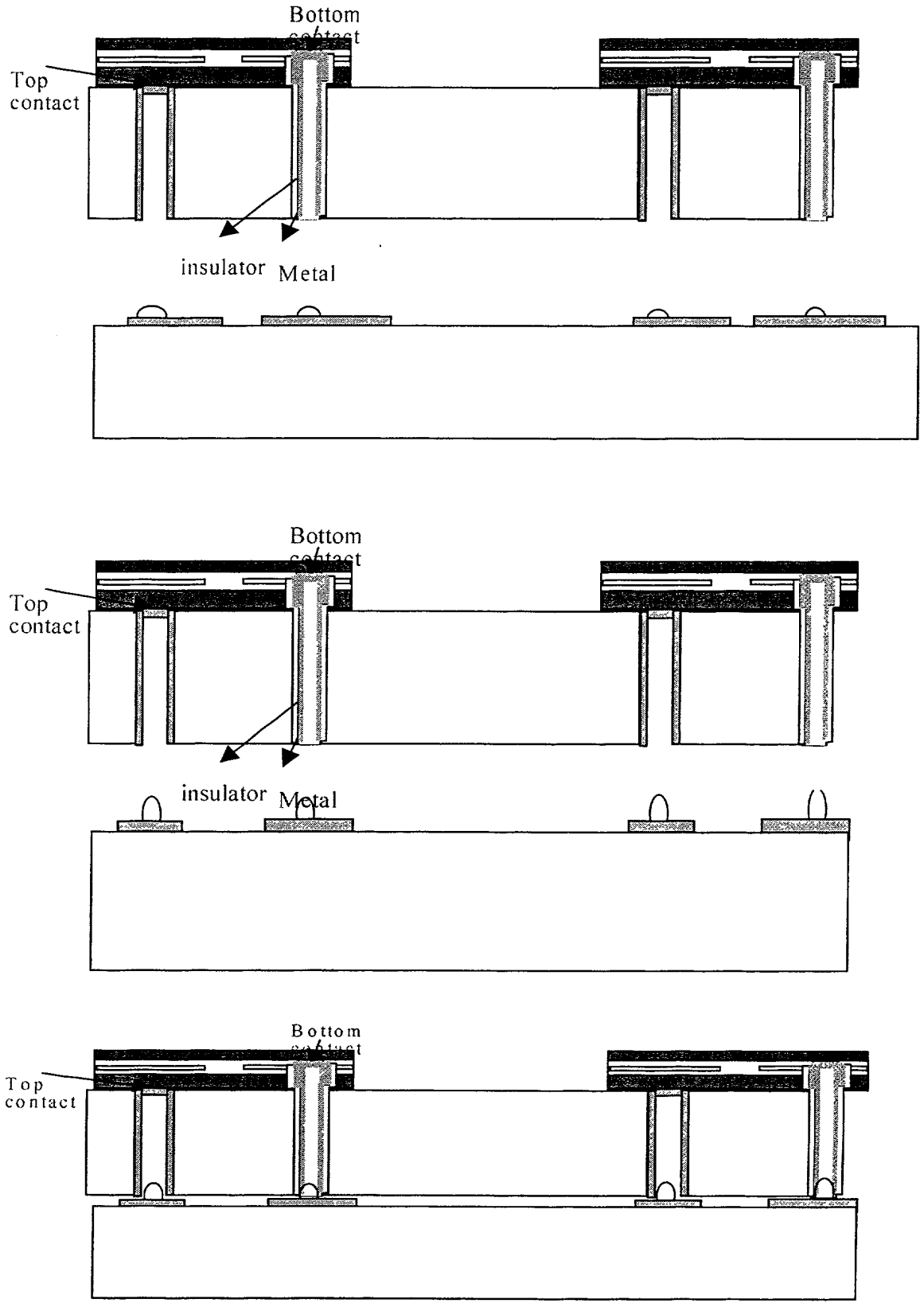


FIG. 16A

FIG. 16B


Bottom contact
Top contact
insulator
Metal
Bottom contact
Top contact
insulator
Metal
Bottom contact
Top contact

Document Classified

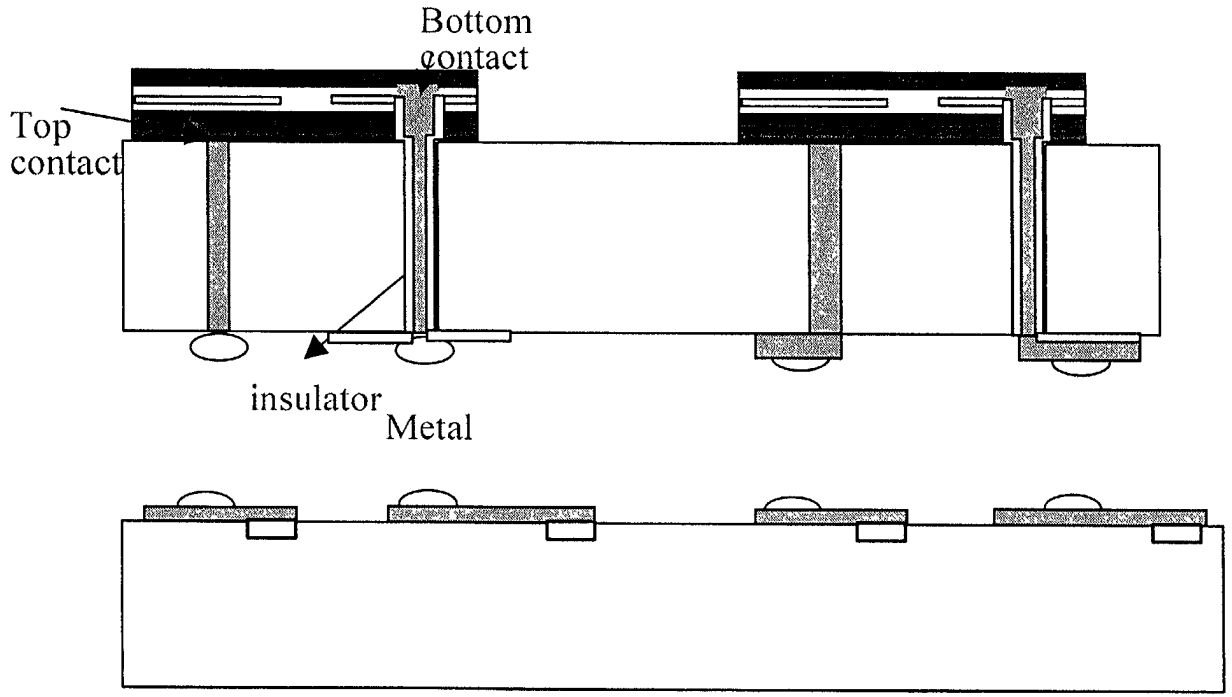


FIG. 16C

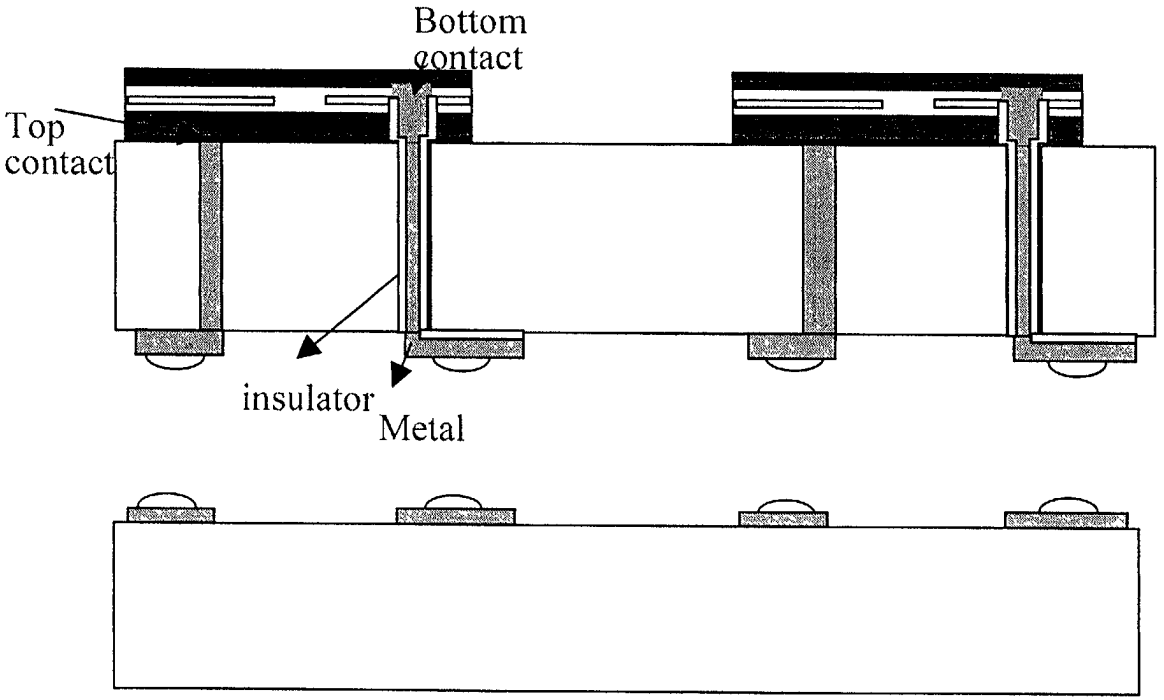
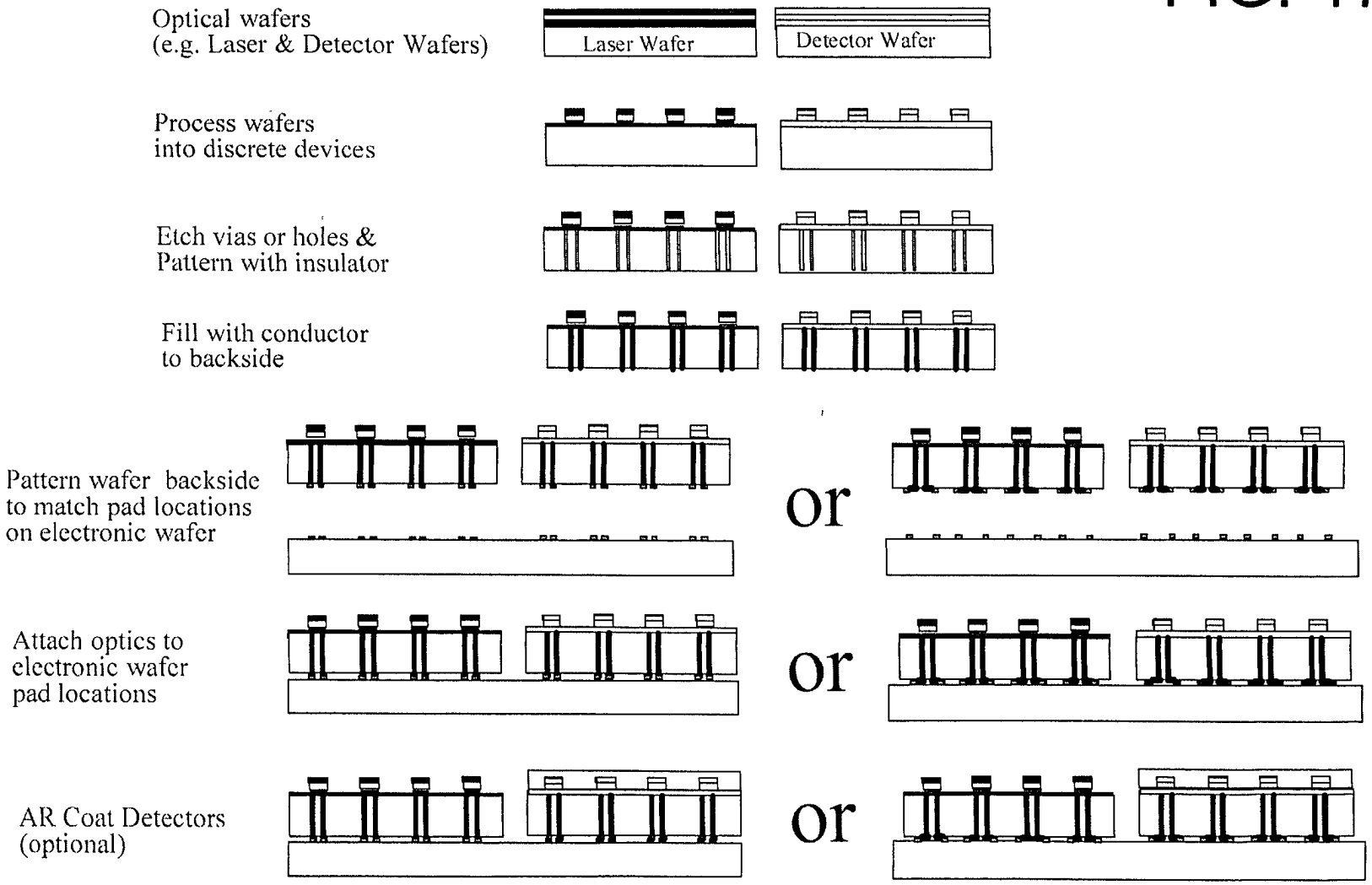


FIG. 16D

FIG. 17


Optical wafers
(e.g. Laser & Detector Wafers)
Laser Wafer
Detector Wafer
Process wafers
into discrete devices
Etch vias or holes &
Pattern with insulator
Fill with conductor
to backside
Pattern wafer backside
to match pad locations
on electronic wafer
or
Attach optics to
electronic wafer
pad locations
or
AR Coat Detectors
(optional)
or

Document Classification

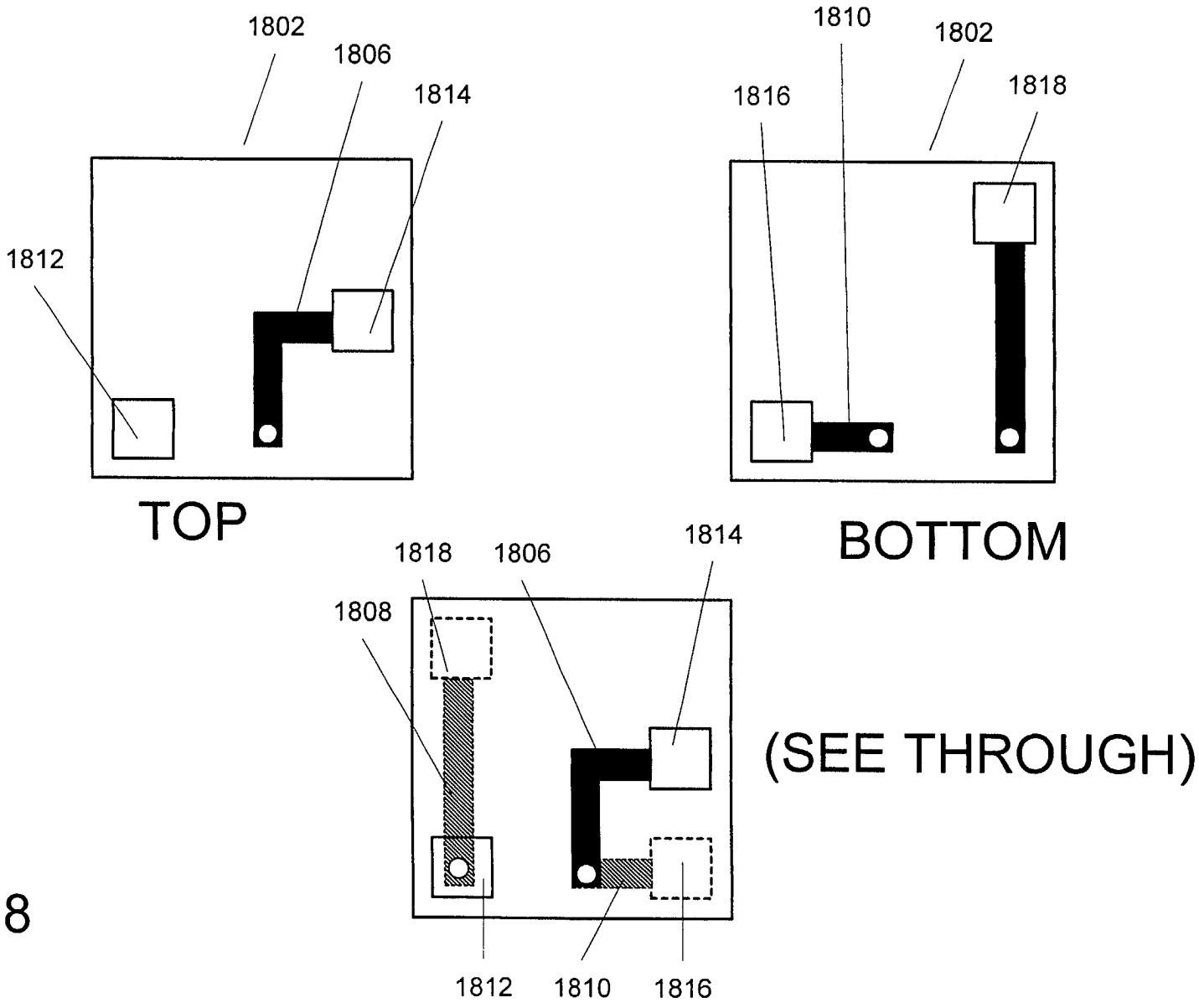
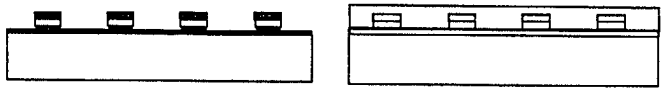


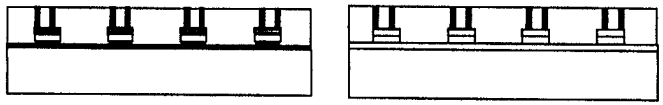
FIG. 18

Optical wafers
(e.g Laser & Detector wafers)

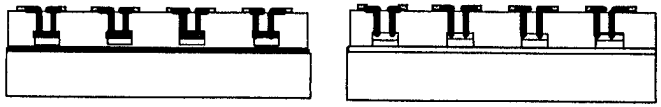
Process into individual devices
& AR coat detectors



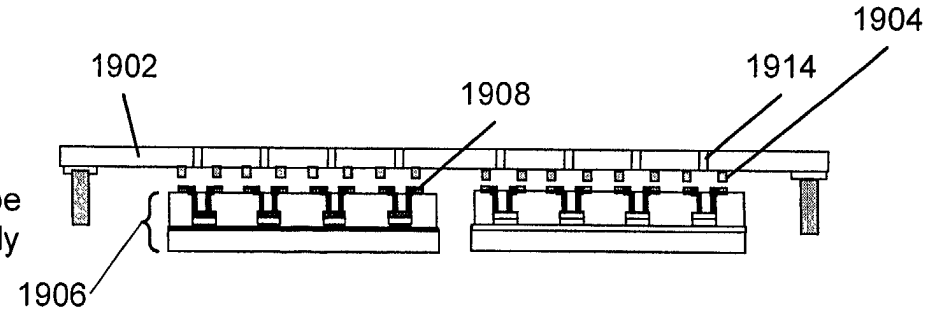
Cover devices with insulator and
pattern vias through to device
contact pads



Pattern optical device wafer
to create traces to locations
that will match mating
contacts on adapter



Attach optical device chip
to adapter via aligning
pads created by patterning
(NOTE: Holes in adapter can be
created pre-post or concurrently
with wafer patterning



Integrate adapter chip with
electronic chip via standoffs,
wires, etc.

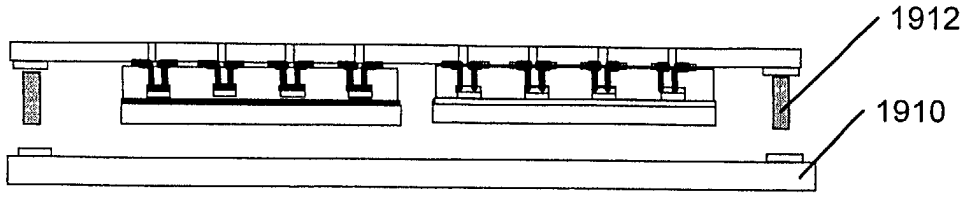


FIG. 19

EDC250 "BSK2030"

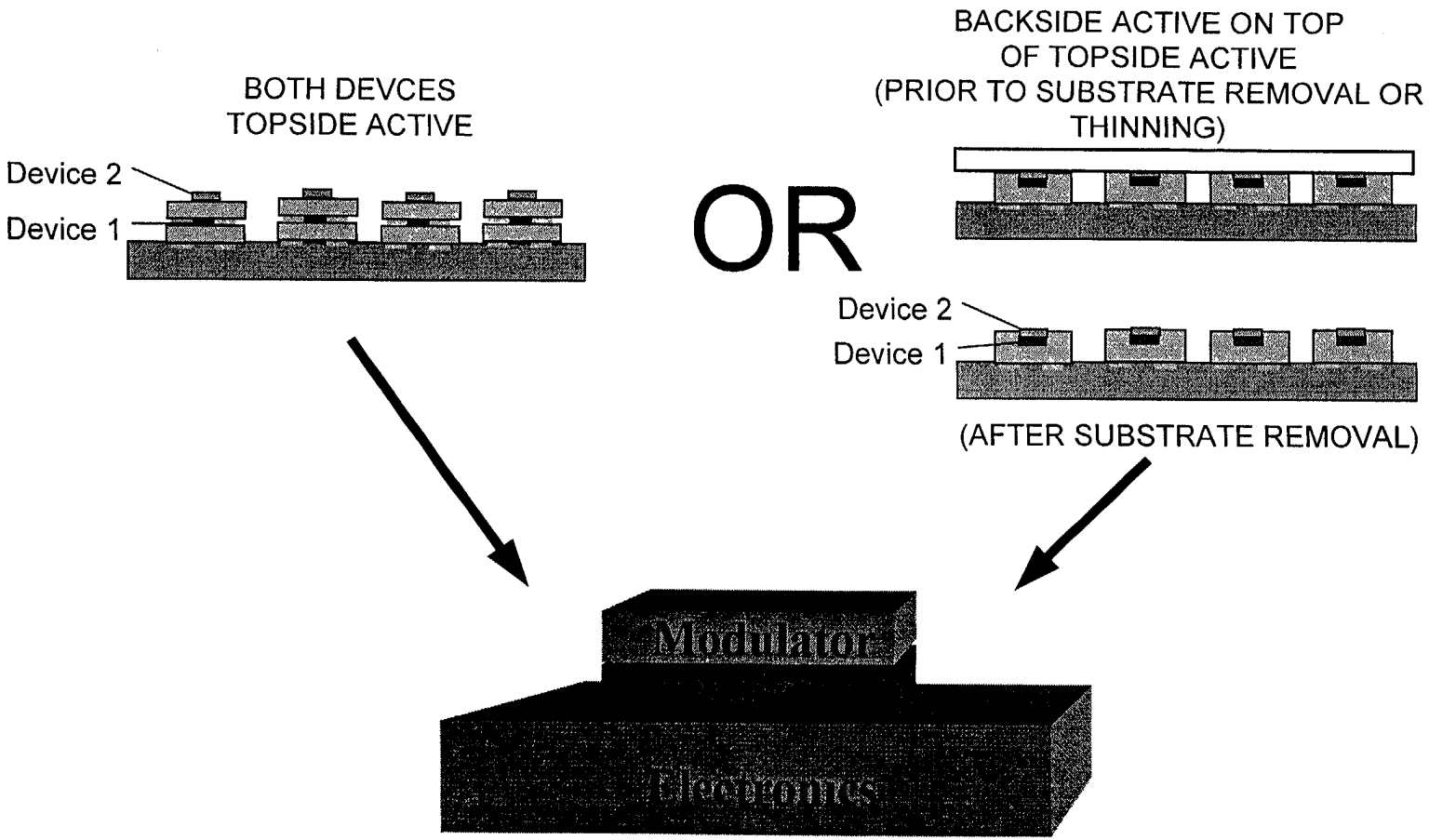


FIG. 20A

40 Gb/s = 20 GHz = 50ps
Wavelength in free space = 3 X 10^{10} cm/s * 50^{12}s = 1.5cm
1/8 wavelength in n=3 = 640 microns

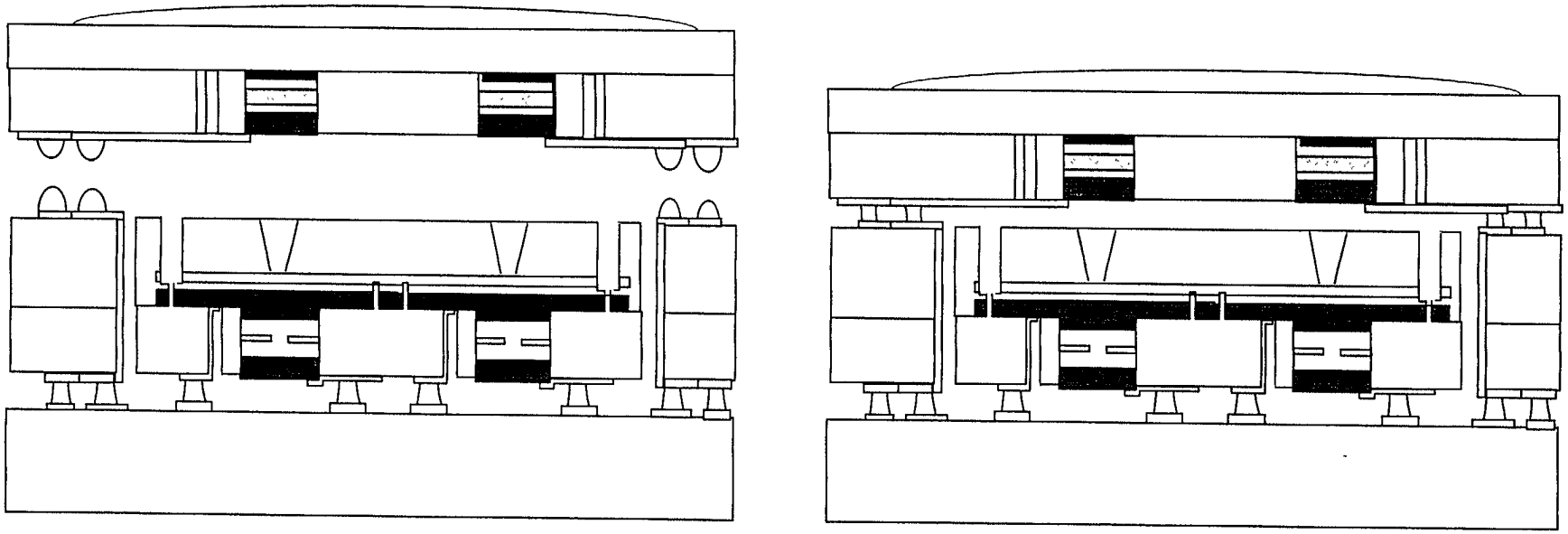


FIG. 20B

PUBLISHED 2004-08-05

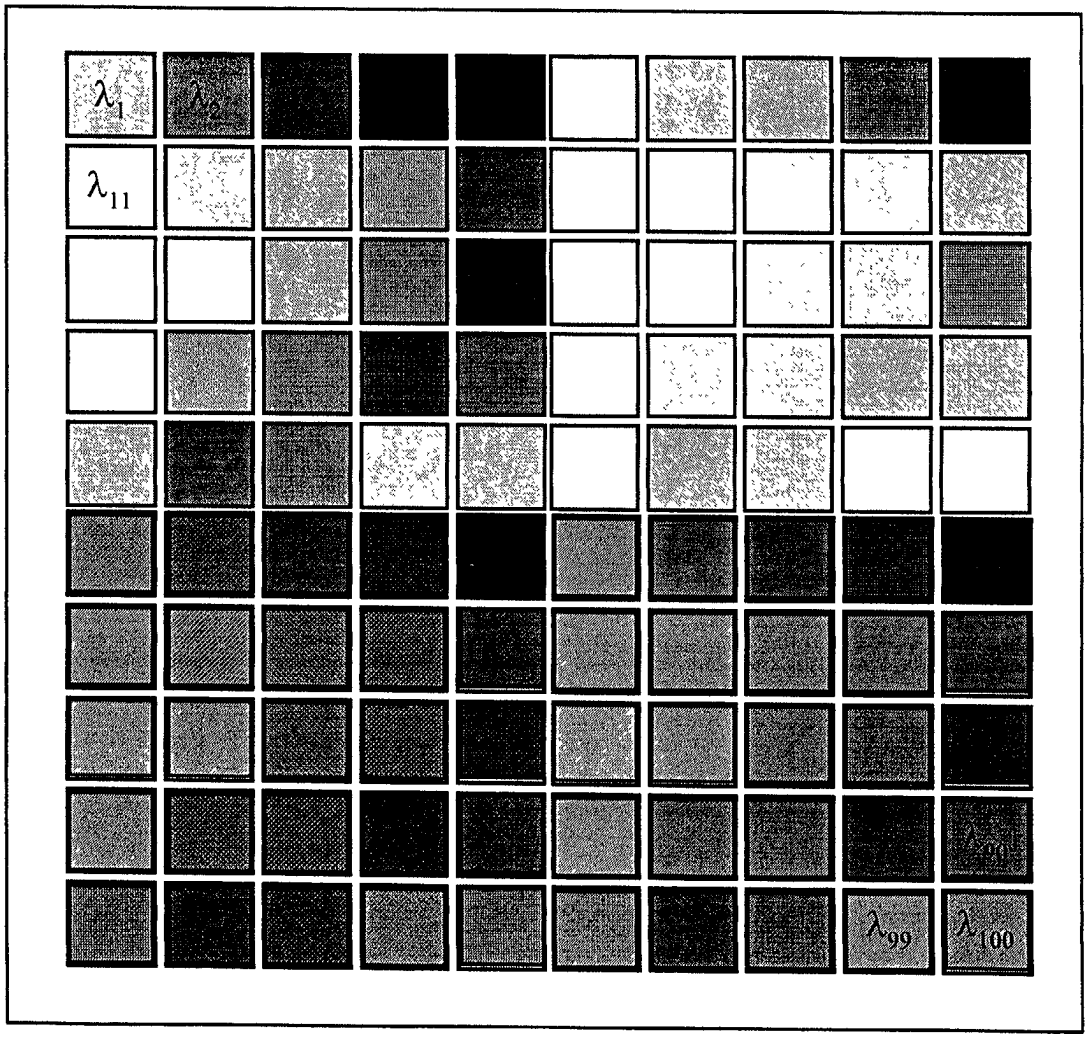


FIG. 21

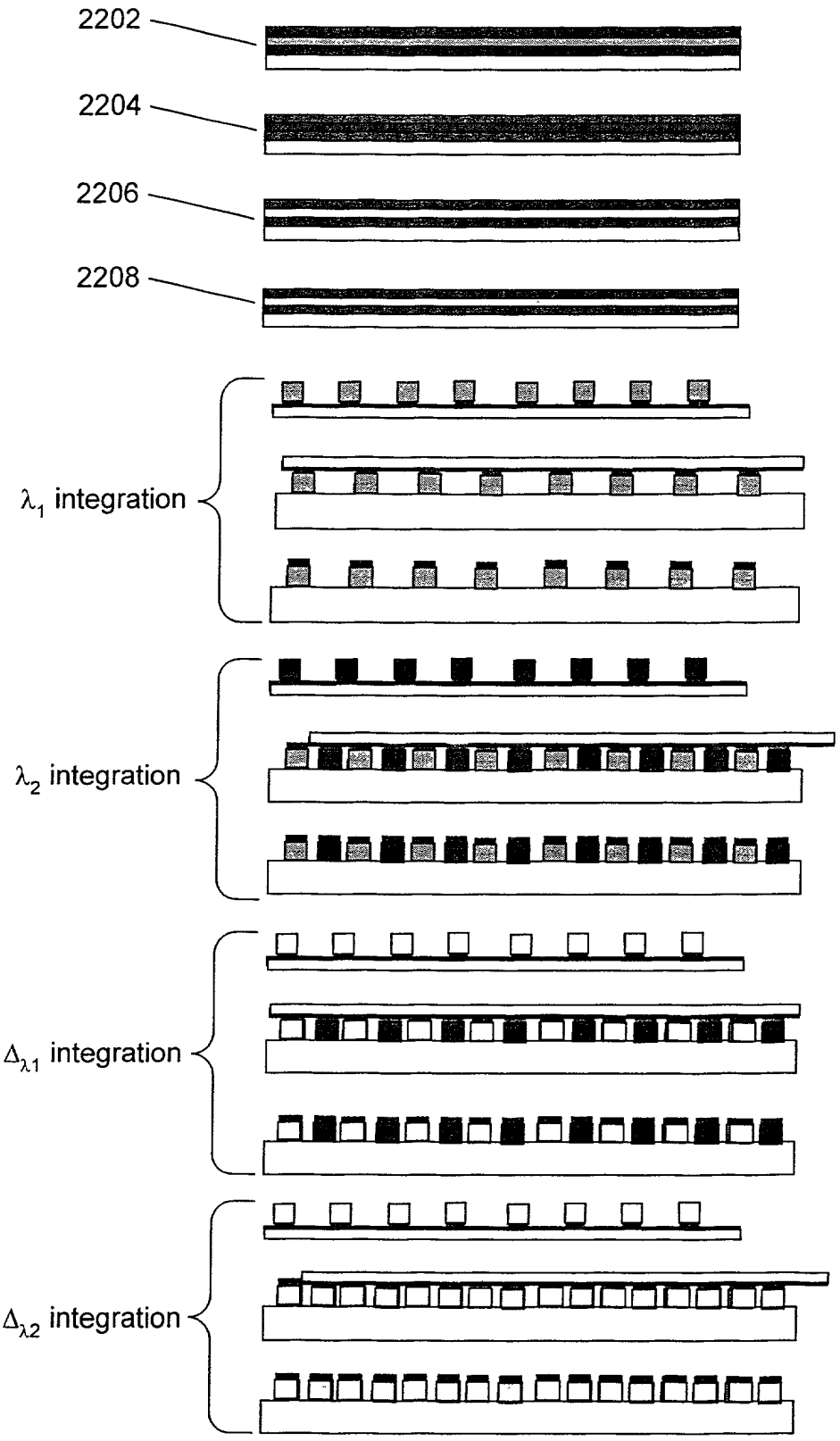
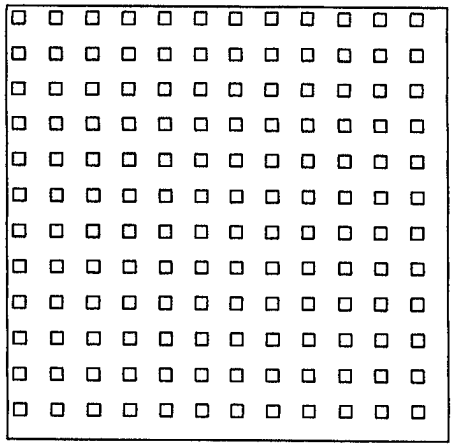
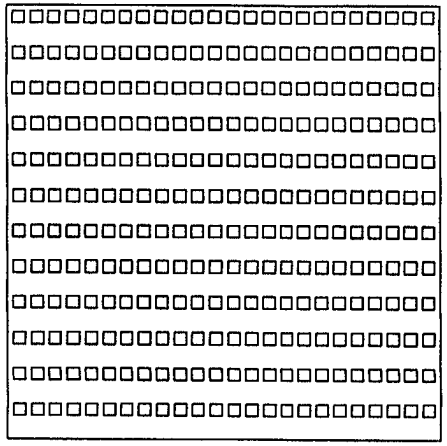

2202
2204
2206
2208
λ_1 integration
λ_2 integration
$\Delta_{\lambda 1}$ integration
$\Delta_{\lambda 2}$ integration

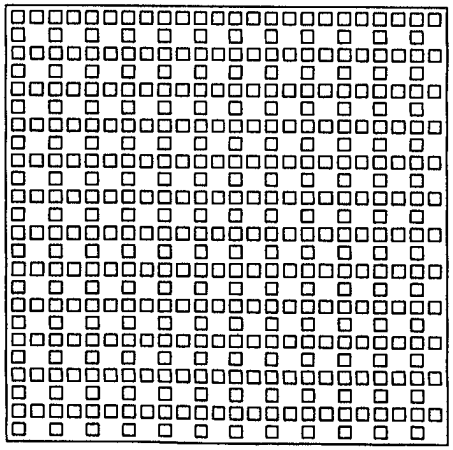
FIG. 22



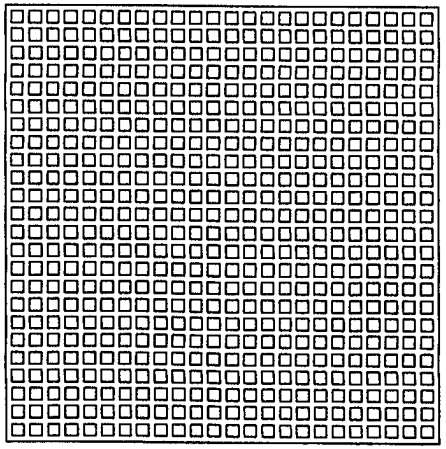
λ_1 integration



$\Delta_{\lambda 1}$ integration



λ_2 integration



$\Delta_{\lambda 2}$ integration

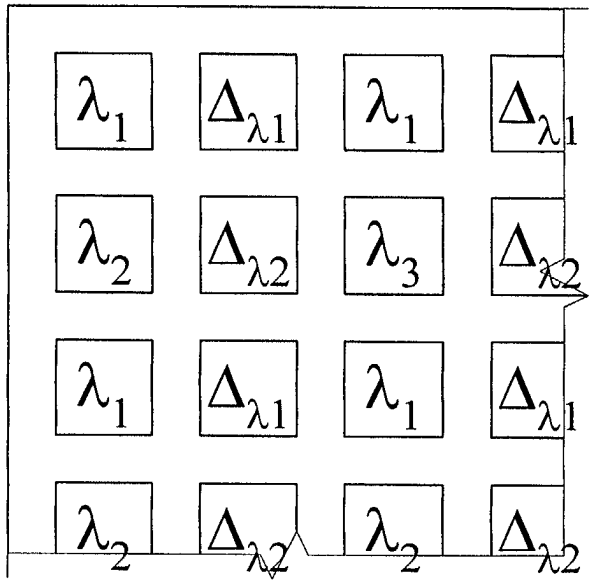


FIG. 23